**AMENDMENTS TO THE SPECIFICATION:**

The heading on page 1, line 3 has been changed as follows:

~~DESCRIPTION~~ BACKGROUND OF THE INVENTION

On page 1, line 4 please add a heading as follows:

Field of the Invention

The paragraph beginning on page 1, line 5 has been changed as follows:

The invention relates to a method for the production of fire protection glazing, ~~consisting of~~ including at least two flat substrates and one transparent fire protection ~~means~~ layer, whereby the fire protection ~~means consists of~~ layer includes at least one film or ~~of a~~ film system having at least one intumescent layer, and the fire protection ~~means~~ layer is introduced between the substrates.

On page 1, line 10 please add a heading as follows:

Related Technology

The paragraphs beginning on page 1, line 20 have been changed as follows:

It is a known procedure to use hydrogels to form such fire protection layers. The main constituent of these hydrogel layers is usually water with admixtures of salts and stabilizing polymers. Here, the stabilizing polymers serve as gel formers. Such a fire protection layer consisting of a hydrogel is described, for example, in ~~German Patent~~ DE 35 30 968.

With the known methods for the production of intumescent layers for fire protection glazing, the material is applied into the glazing preferably by means of pouring, or by gel and

by resin-casting methods in which the appropriate material is applied between two panes that are held apart from each other.

In the case of pouring methods, the intumescent material is poured onto a pane, after which the second pane is applied over it. Such a method is described, for example, in ~~German Preliminary Published Application~~ DE 44 35 843. Here, a drainage protection rim made of putty is placed onto a horizontally positioned glass pane, and then a fire protection solution is poured onto the glass pane. The water of the solution is removed by means of drying processes so that the layer solidifies to form a solid fire protection layer.

The paragraph beginning on page 3, line 2 has been changed as follows:

The intumescent fire protection material can also be poured into an already joined double glass pane in which two panes are preferably positioned at a certain distance from each other by means of a frame-like holder. The ~~interstice~~ space thus formed is then filled with the appropriate material. This is described, for example, in ~~German Preliminary Published Application~~ DE 195 25 263.

The paragraph beginning on page 3, line 18 have been changed as follows:

Therefore, there is a need for a method for the production of fire protection layers with which the above-mentioned disadvantages do not occur. A major improvement is the approach of producing the fire protection layers separate from the glazing unit into which they are to be installed at a later point in time. ~~German Patent~~ DE 28 15 900, for example, discloses a method for the production of a solid layer of an intumescent material comprising hydrous or hydrated metal salts in which the fluid material is poured into a mold where it hardens.

~~German Patent~~ DE 27 52 543 describes a method for the production of a light-permeable, fire-retardant glass pane with at least one solid layer made of hydrated sodium silicate, whereby the layer is sandwiched between two glass panes. The intumescent layer can be formed, for example, on the glass pane; it can be provided as a film on its own, or else it can consist of several layers.

~~German Patent~~ DE 35 09 249 discloses a method for the production of a transparent fire protection sheet. With this method, an aqueous solution of an expandable material is applied onto a support, this layer is dried by applying heat until the residual water content ranges from 20% to 48% by weight and the expandable material thus obtained is applied as at least one layer onto at least one glazing pane.

The paragraph beginning on page 4, line 18 has been changed as follows:

Such film systems typically have at least one layer having a high elasticity so that the layer system exhibits advantageous mechanical properties and can be transported, stored and processed very well. In order to simplify the introduction into various environments, the film system can have at least one adhesive layer with which it can be introduced into various components of a glazing unit and can be affixed to ~~said~~ the components.

The paragraphs beginning on page 5, line 9 have been changed as follows:

In the realm of the production of laminated safety glass, it is likewise a known procedure to introduce functional films into glazing units. On this subject, for example, ~~German patent applications~~ DE 36 15 225 A1 and DE 100 02 277 A1 describe special methods. However, the prior-art methods are not suitable for effectively introducing fire protection films into a glazing unit, since specific requirements have to be made of safety glass and these differ from those for fire protection glazing.

## GENERAL DESCRIPTION OF THE INVENTION

Therefore, the ~~objective of the~~ invention ~~is to provide~~ provides an effective method for the production of fire protection glazing ~~comprising~~ including a fire protection ~~means~~ layer in the form of a film or of a film system. The method should be especially well-suited for the production of fire protection glazing units having a large surface area.

~~According to the invention, this objective is achieved by the features of Claim 1. Advantageous embodiments of the invention are the subject matter of Claims 2 to 15.~~

With the method according to the invention for the production of fire protection glazing, the glazing unit employed ~~consists of~~ includes at least two flat substrates and one transparent fire protection ~~means, whereby the fire protection means consists of~~ layer including at least one film or of a film system having at least one intumescent layer. The fire protection ~~film~~ layer is introduced between the two substrates. ~~The method is characterized in that several~~ Several film sections of the fire protection ~~means~~ layer are applied onto a first substrate, whereby the film sections cover the entire surface of the substrate that is to be provided with the fire protection ~~means~~ layer. Then a second substrate is applied onto the first substrate having the film sections and a laminating process is carried out at elevated pressure and elevated temperature.

The individual film sections are preferably applied onto the substrate in such a manner that their edges abut each other and/or overlap slightly. Here, it has proven to be advantageous to affix the film sections onto the first substrate. For this purpose, the fire protection ~~film~~ layer can be provided, for example, with an adhesive layer so that the film sections can be ~~glued on~~ adhered to the substrate.

Various bonding modalities can be used for the adhesive layer. For example, water-soluble organic binders such as, for example, polyvinyl alcohols, cellulose derivatives, alcohols and/or polyalcohols have proven to be advantageous. Moreover, inorganic binders

such as, for example, wetting agents having different moduli and degrees of dilution, silicic sols and/or water can likewise be employed. In an especially preferred embodiment of the invention, the adhesive ~~consists of~~ includes glycerin or water or of mixtures thereof. In this case, preference is given to a mixture of approximately 85% glycerin and 15% water.

The paragraphs beginning on page 8, line 15 have been changed as follows:

In an especially preferred embodiment of the invention, the pressure during the laminating process is ~~in the order of magnitude of~~ about 1 bar to about 10 bar. In order to prevent the foaming effect of the fire protection film that acts as a fire protection from already becoming active during the production process, the temperature during the laminating process has to lie below the foaming temperature of the fire protection means. However, in order to achieve a melting of the film sections, the temperature has to lie within the thermoplastic range of the fire protection means.

Additional advantages, special features and advantageous refinements of the invention ~~ensue~~ may be apparent from ~~the subordinate claims and from~~ the presentation of preferred embodiments given below.

## DETAILED DESCRIPTION

In an especially preferred embodiment of the method according to the invention, in order to produce fire protection glazing, a film or film system is introduced between two glass panes. A hybrid fire protection film is used as the fire protection ~~means~~ layer. This film preferably ~~consists of~~ includes several layers, at least one of which is intumescent. In another especially preferred embodiment of the invention, the layer structure is supplemented by a third substrate.

The paragraphs beginning on page 9, line 15 have been changed as follows:

The term "fire-retardant" as employed in the sense of the invention is defined as a layer or film that is capable of absorbing the energy of a fire in order to protect structural components or building sections located behind ~~said~~ the layer or film.

In order to enhance the mechanical properties of the fire protection ~~means~~ layer, it is advantageous for the film system to have at least one layer having a high elasticity. Moreover, in order to simplify the application into various environments, it has been proven to be advantageous for the film system to have at least one adhesive layer that serves for the introduction into environments.

An especially advantageous embodiment of the invention is characterized in that at least one constituent of the film system has a siliceous base. This has the advantage that high fire resistance as well as good mechanical properties can be achieved. Thanks to the use of a siliceous base, the desired elasticity of the fire protection ~~means~~ layer can be achieved already at relatively low contents of organic additives.

The variation of different properties within a single layer that can be laminated, for example, as a film, has the advantage that this makes the fire protection ~~means~~ layer easier to produce. Moreover, this makes it possible to achieve a high degree of transparency, assuming a low absorption in the visible spectrum.

The paragraphs beginning on page 10, line 16 have been changed as follows:

In order to produce fire protection glazing using the method according to the invention, several film sections of the fire protection ~~means~~ layer are applied onto a first substrate. The substrate is typically a glass pane, but other substrate materials can also be used. With the method according to the invention, in particular, fire protection units having a large surface area can be produced so that the dimensions of the substrate can be, for example, in

the order of magnitude of the industrial standard dimensions, namely, width W = 3.21 m × length L = 6.00 m. However, larger or smaller substrates can also be used.

The glass pane can have ~~already~~ been pretreated in various process steps that are necessary or advantageous for the production of a desired glazing unit. For example, functional layers can be applied that influence the transmission of the glazing unit that is to be produced.

On the first substrate, those areas that are to receive a fire protection layer are covered with film sections. The individual film sections can either be manufactured in the desired size or can be cut from a film having a large surface area. Making ~~it~~ the film section from a film having a large surface area has the advantage that sections having any desired surface area can be cut out.

It has proven to be especially advantageous for the fire protection ~~film~~ layer to have an adhesive layer on at least one side so that the film sections can easily be applied onto the first substrate and affixed thereto. The adhesion force of the adhesive layers employed can advantageously be adjusted so that an adaptation can be made to various surrounding materials such as glass, plastic or the like.

The paragraphs beginning on page 12, line 16 have been changed as follows:

In order to fuse the individual film sections with each other, the layer structure undergoes a laminating process at an elevated pressure and elevated temperature. This laminating process can be carried out in a device such as, for example, an autoclave. The duration of the laminating process is preferably in the order of magnitude of ~~3 to 6~~ three to six hours. In an especially preferred embodiment of the invention, the laminating process takes [[4]] four hours. This includes, for example, a heating phase of about one hour, a retention phase of about two hours and a cooling phase of about one hour.

In order to fuse the film sections, the temperature during the laminating process has to lie within the thermoplastic range. So that the fire protection ~~means~~ layer does not already become active and expand during the production process of the glazing, however, the temperature employed has to lie below the foaming temperature of the fire protection ~~means~~ layer. It has proven to be advantageous to select a temperature that is approximately 10°C to 20°C [18°F to 36°F] below the foaming temperature of the particular fire protection ~~means~~ layer. It has proven to be advantageous for the temperature to be at least 70°C [158°F]. Maximum temperatures of 150°C [302°F] have proven to be especially advantageous. In a particularly preferred embodiment of the invention, the temperature is in the order of magnitude of 80°C to 100°C [176°F to 212°F].

The pressure during the laminating process is preferably in the order of magnitude of ~~1~~ one bar to ~~10~~ ten bar. In an especially preferred embodiment of the invention, the pressure is ~~1~~ bar to ~~2~~ two bar.